

animals. To produce passive Arthus reactions, two new-born guinea pigs were injected intravenously, and two intraperitoneally, with 700 µgm. rabbit anti-ovalbumin followed 24 hr. later by intradermal injection of 30 µgm. ovalbumin. The intravenously sensitized animals developed typical Arthus reactions with maximal intensity at 4 hr., at which time the lesions averaged 45 mm. in diameter with a central hæmorrhagic area measuring 8–10 mm. in diameter. By 24 hr. the lesions had almost completely regressed. The animals sensitized intraperitoneally displayed milder reactions. Large necrotic lesions were also produced in neonatal animals by the intradermal injection of 0.025 MLD. of diphtheria toxin.

Our finding that delayed-type hypersensitivity can be induced in some guinea pig embryos is consistent with the relative maturity of this species at birth.

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JONATHAN W. UHR

Departments of Microbiology and Medicine,
New York University School of Medicine,
New York.

- ¹ Billingham, R. E., Brent, L., and Medawar, P. B., *Nature*, **172**, 603 (1953).
- ² Fennestad, K. L., and Borg-Peterson, C., *Nature*, **180**, 1210 (1957).
Sterzl, J., Kostka, J., Riha, L., and Mandel, L., *Folia Microbiologica*, **5**, 29 (1960).
- ³ Schinkel, P. G., and Ferguson, K. A., *Austral. J. Biol. Sci.*, **6**, 533 (1953).
- ⁴ Freund, J., *J. Immunol.*, **13**, 285 (1927).
- ⁵ Waksman, B. H., and Matoltsy, M., *J. Immunol.*, **81**, 235 (1958).
- ⁶ Weiss, D. W., *J. Exp. Med.*, **108**, 83 (1958).
- ⁷ Uhr, J. W., Salvin, S., and Pappenheimer, jun., A. M., *J. Exp. Med.*, **105**, 11 (1957).
- ⁸ Gell, P. G. H., and Hinde, I. T., *Brit. J. Exp. Path.*, **32**, 516 (1951).
- ⁹ Ipsen, H. L., *J. Exp. Zool.*, **51**, 51 (1928).
Draper, R. L., *Anat. Rec.*, **18**, 369 (1920).
- ¹⁰ Freund, J., *J. Immunol.*, **17**, 465 (1929).

Insects attacking *Striga*

WORKING in Ibadan, Nigeria, Williams and Caswell¹ have recently noted *Smicronyx* sp. (Curculionidae: Coleoptera), the larva of which lives within the fruits feeding on the immature seeds of *Striga* sp. The only other reference mentioned is that of Agarwala and Naqvi² on *Striga* in Bihar, India. Williams and Caswell have apparently missed references on the subject, especially that on *Smicronyx albovariegatus* Faust. recorded on *Striga*.

The first published record of an insect attacking *Striga* was that of Murthy and Rao³, who observed the caterpillars of *Precis orithya* Swinhoei (Fam. Nymphalidae, Lepidoptera) feeding on leaves, flower buds and tender fruits of *Striga* in the former Hyderabad State, India. Following the publication of that observation, Uttaman⁴ pointed out that during the course of work on *Striga* in Malabar, India, he had noted grubs of a beetle (Sub-fam. Galerucinae) feeding on stem, leaves and the pods. While continuing work on the insect fauna of this root parasite in Hyderabad, I collected *Striga* stem galls in numbers caused by a curculionid weevil grub, and Mani⁵, on the basis of the plant material sent from Hyderabad, described briefly the structure of the gall. Work was later initiated on the above insect at the Entomological Laboratory, Government Agriculture Research Station, Rudroor, Hyderabad State, and the weevil was identified as *Smicronyx albovariegatus* Fst. by the Commonwealth Institute of Entomology, London.

A brief account of the above insect was afterwards given by Khan and Murthy⁶. The adult weevils appear early in September and galls were noticed from the middle of September until January. A single grub is found in each gall. The number of galls per plant may vary from 1 to 30. When full grown, the grub comes out of the gall and pupates in the soil. The incidence of the weevil varies from 40.7 to 62.0 per cent. The grub not only causes stem galls but also eats into the seed capsules. During later work in Mysore State, another mode of injury caused to *Striga* plants by this weevil was recorded, namely, the formation of root galls by the grub⁷. It was observed that on account of the presence of root-galls there is weakening of the *Striga* plant which may perhaps be due to the impaired absorption of nutrients due to root damage.

Other insects recorded on *Striga* in India are *Monolepta signata* Oliv. (Galerucinae; Chrysomelidae), caterpillars of a *Pterophorid* moth eating into the seed capsules⁸ and a species of aphid awaiting determination.

While working in the Entomological Division, Government Agriculture Research Station, Rudroor, a detailed investigation was carried out on the possibilities of biological control of *Striga*, which is to be published shortly. It has been found that both *P. orithya swinhoei* and *S. albovariegatus* do exercise certain natural checks on the growth and development of *Striga* in the field. While no natural enemies have been encountered against *S. albovariegatus*, I have recorded⁹ the caterpillars of *P. orithya swinhoei* being attacked by the tachinid endoparasite, *Sturmia* (*S. Str.*) *flavohalterata* Bisch, the percentage incidence ranging from 2.5 to 52.5. The eggs are also occasionally attacked by *Trichogramma* sp.

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D. V. MURTHY*

Division of Entomology,
Department of Agriculture,
Seshadri Road,
Bangalore 1.

* Formerly working in the Division of Entomology, Department of Agriculture, Hyderabad State. Present address: Chesterford Park Research Station, nr. Saffron Walden, Essex.

- ¹ Williams, C. N., and Caswell, G. H., *Nature*, **184**, 1668 (1959).
- ² Agarwala, S. B. D., and Haider Naqvi, S. Z., *Proc. Bihar Acad. Agric. Sci.*, **2**, 121 (1953).
- ³ Murthy, D. V., and Rao, A. S., *Curr. Sci.*, **9**, 342 (1949).
- ⁴ Uttaman, P., *Curr. Sci.*, **9**, 445 (1949).
- ⁵ Mani, M. S., *Agra Univ. J. Res. (Science)*, **2**, 2, 246 (1953).
- ⁶ Khan, M. Q., and Murthy, D. V., *Ind. J. Ent.*, **17**, 3 (1955).
- ⁷ Murthy, D. V., *Curr. Sci.*, **28**, 502 (1959).
- ⁸ Khan, M. Q., and Murthy, D. V., *Sci. and Cult.*, **22**, 3, 175 (1955).
- ⁹ Murthy, D. V., *Curr. Sci.*, **28**, 256 (1959).

Age Determination of Seals

A WORD of warning is necessary when the number of cementum rings in the canine teeth of seals is used to determine the age of some species of Phocidae. As Mansfield and Fisher¹ have stated, they were able to count 18–20 rings in a tooth of a harbour seal (*P. vitulina* L.) of 19 years of age. For practical purposes this is good enough in the higher range of years, but the possible error becomes disproportionately large if applied to years 1–10; years which contain the critical years of sexual maturity both potential and actual.